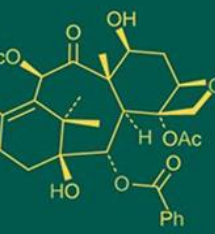
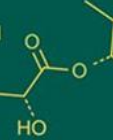
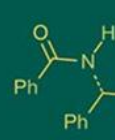
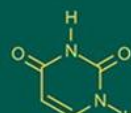
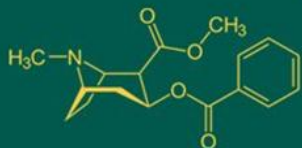


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The Socio-economic impacts of Geographical Indication commodities: A Review

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Abstract

Geographical Indications (GI) is a legal protection to products that are specific to a geographical region and have unique qualities or characteristics associated with that region which includes agricultural products and food stuff. Consider a various Intellectual property (IP), GIs can comprise different levels of certification such as the protected designation of origin (PDO) and protected geographical indication (PGI), depending on the product category. First, the paper addresses awareness and describe the intellectual property in India. Second, the paper covers the comprehensive review of so far conducted studies in geographical indications in agriculture and allied products. From the review, it is seeming that the geographical indication improved the welfare of the producers but not at the remarkable level. A good or product which gets GI alone will not made it to be successful, the awareness of the product to be reached on both producer and consumer side. There is a lack of quantitative research towards GI products, there is a need for further research on GI products to identify the key issues and challenges in the Geographical indication commodities.

Keywords: Geographical indication (GI), intellectual property (IP), welfare impacts, WTP, consumer preference

1. Introduction

Over the years, consumers' food-related behaviour, habits, and attitudes have evolved significantly, particularly in their consumption patterns. (Kohls and Uhl, 2002) ^[25]. To meet those consumers' demand for quality and distinguish it from competitors, producer differentiate their products through unique production, distribution, quality standards. (Dias and Mendes, 2018) ^[16]. As a results, product certifications of many types have emerged to inform consumers about the products' unique characteristics and to protect producers against free riding and fraud (Rupprecht *et al.*, 2020) ^[52]. For example, such certification can be given to foodstuff and beverages.

In this context, the product origin emerged as a support or guarantee for quality and differentiation of such products from the markets. (Dinnie, 2015) ^[17]. Even though the certifications of origin differ across the countries, one frequent link to the name of the products is the geographical indications (GI). Consider a various Intellectual property (IP), GIs can comprise different levels of certification such as the protected designation of origin (PDO) and protected geographical indication (PGI), depending on the product category, portion of raw materials that come from specific area or which of the processes take place there. (Dias and Mendes, 2018) ^[16]. Registering a GI is a very demanding and bureaucratic process, which require time, collective investments and efforts (Quinones *et al.*, 2016) ^[47]. Once acquired, GI certification enables price premium and access to new marketing channels, advantages over other producers may want to benefit from (Rupprecht *et al.*, 2020) ^[52]. GI is considered as an instrument for the valuation of goods that are geographically distinguished and recognized for their quality from where these goods come from (Castro and Giraldi, 2018) ^[9]. Nirosha and Mansingh (2025) ^[42] from their review highlighted that the sustainability of geographical indications is a developing area of study and emphasized the need for further research, particularly to explore its potential contributions toward achieving the United Nations Sustainable Development Goals. With this background, this paper addresses the two objectives. First, the paper addresses awareness and describe the intellectual property in India. Second, the paper covers the comprehensive review of so far conducted studies in geographical indications in agriculture and allied products.

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2. Intellectual property and geographical indications

According to the World Intellectual Property Organisation (WIPO), intellectual property refers to every creation made by the human mind, and it protects the interests of its creators.

According to Barbosa (2012) [3], intellectual property is described as “a highly internationalized chapter of the Law, including the field of industrial property, copyright and other rights in intangible assets of various kinds.” It includes industrial property rights, copyright and *savoir-faire*. The Convention Establishing the World Intellectual Property Organization (WIPO), concluded in Stockholm on July 14, 1967 (Article 2, viii), provides that intellectual property shall include rights relating to literary, artistic and scientific works, performances of performing artists, phonograms and broadcasts, inventions in all fields of human endeavour, scientific discoveries, industrial designs, trademarks, service marks and commercial names and designations, protection against unfair competition, and all other rights resulting from intellectual activity in the industrial, scientific, literary or artistic fields (WIPO, 2024). The necessity to enact laws to protect intellectual property is due to the following issues: political visibility (associated with the intrinsic value of the assets and the difficulty to ensure effective protection of property rights of intangible assets); attempt to promote creativity, dissemination and application of its results; promotion of fair trade, and protection to the interests of consumers. These issues can contribute to economic growth (Trentini, 2012) [60]. Intellectual property determines who can use and control these assets, how and with whom permission (Shaver, 2010) [54].

Intellectual defines that both trademarks and geographical indications are identifiers and differentiators, but a trademark indicates business origin while GI geographical origin (Trentini (2006) [58]. A product that is granted the right to a GI may also have an individual mark, and hence the prestige of the GI adds to the trademark, this prestige comes from factors both intrinsic and extrinsic to the goods or services such as marketing policies and competition, whereas in the GI, to the geographical

environment. As the legal text of the TRIPS document specifies in order to obtain the GI protection, a good must qualify for the indication-qualitygeographical origin link condition. Therefore, the indication identifies a good originating in a certain territory and that the good's quality, reputation, or other characteristics can be attributable to its geographical origin. This dual requirement essentially assures that the GI is associated with the quality of the good and that quality is associated with the geographical origin of the good (Das, 2007) [12]. In India, the Geographical Indications of Goods (Registration and Protection) Act passed in 30th December, 1999 provide for the registration and better protection of geographical indications relating to goods. This Act promises to provide adequate protection to the producers of GI goods, protection to consumers from deception and promotion of goods bearing GI in export market. In reality, there are several inadequacies in this act which is needed to be addressed such as i) No effective enforcement mechanism is there at domestic as well as at export markets, ii) There is no any agency available to monitor post-GI mechanism in India and iii) It does not lay much emphasis on inspection and monitoring mechanism for GI protection, due to which competitors try to free ride over its reputation. However, this leads to loss of trust on the brand, they mislead consumers, in all that process the one who lose most is actual right holder (Youkta and Nupur, 2020) [61].

According to the fourth schedule of intellectual property in India, the goods are classified into 34 classes, in which the class 31 describes the Agricultural, horticultural and forestry products and grains not included in other classes; live animals; fresh fruits and vegetables; seeds, natural plants and flowers; foodstuffs for animals, malt (Intellectual Property India, 2024) [59]. Darjeeling Tea was the first product to get GI status in India and as on march 2024, 643 products have received GI tags in India and 7,15,028 GI tags globally. (Source: IP, India and WIPO).

3. Methodology

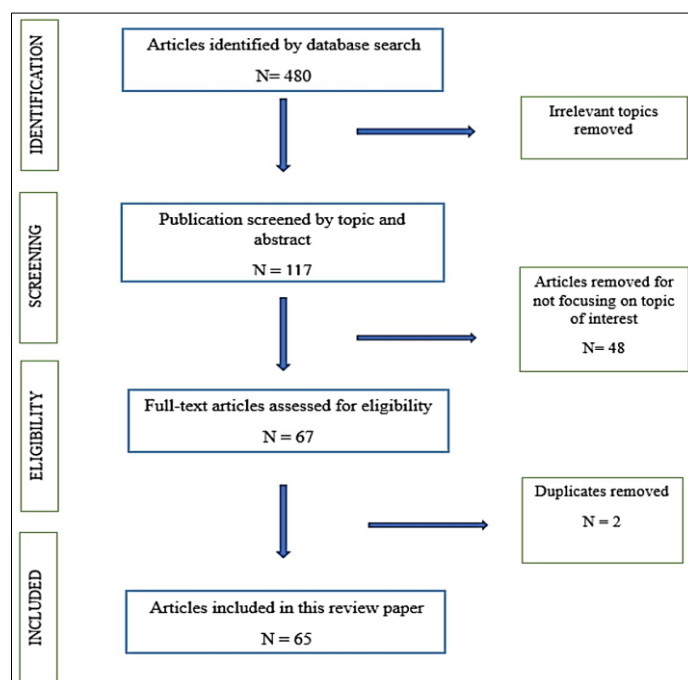


Fig 1: The PRISMA Framework

The Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) technique was applied. The search strategy used in this literature is to determine the information related to

Geographical indications since the early period of 2000. Journal articles, public notices, book chapters, and proceedings based on this research topic were analysed.

Search Keywords	Search Databases
Geographical Indications, WIPO	Google scholar
Intellectual Property Impact Assessment of Geographical Indications Consumer preferences for Geographical Indications Value chain analysis of GI	Library genesis World Intellectual Property Organization Scopus Science Direct Frontiers

About 480 publications in all were found during the first search. After that, 365 of these publications were eliminated after being scrutinised for topic relevancy. The articles that were removed during the first screening process were not about economics bases; rather, they were about other fields like breeding aspects. 48 of the remaining 115 articles were eliminated after they were checked for eligibility based on the topic and abstract of interest. We incorporated all articles that discussed geographical indications, its impact assessment, value chain and

consumer preferences, to gain a comprehensive understanding of Geographical indications in this context. After a thorough eligibility screening of 67 articles, 2 had duplicate content, and in addition, recommendations from experts and citations from the papers that were assessed resulted in the inclusion of 65 articles. At last, 65 publications were reviewed and summarized in this paper. The crops-based studies on impact assessment and consumer preferences on Geographical Indication commodities are depicted in Table.1

Table 1: crops-based studies on impact assessment and consumer preferences on Geographical Indication commodities

Sl. No.	Crops	Country	Methodology	References
1	Basmati Rice	(Uttarakhand) India	Heckman Selection model	Jena and Grote (2010)
2	Olive and Wines	European Union	Endogenous switching regression model	Poetschki <i>et al.</i> (2021) ^[46]
3	GI Rice (Palakkadan Matta, Navara, Jeerakasala, Gandhakasala, Pokkali and Kaipad)	Kerala (India)	Treatment Effect Analysis	Neetha and Umesh (2012) ^[34] , Radhika <i>et al.</i> , (2018) ^[48] , Radhika <i>et al.</i> (2021) ^[49]
4	Jasmine Rice	Thailand	Logit model	Ngokkuen and Grote (2012) ^[38]
5	Olive and wine	Italy and Spanish	Hedonic price models	Cacchiarelli (2016) ^[8]
6	GI Banana	Tamil Nadu (India)	Conjoint Analysis	Dhamodharan and Selvaraj (2015)
7	Apple wine	Germany	Binary logit model	Ramon Teuber (2011)
8	Robusta Coffee	Indonesia	Partial Least square method	Ihsaniyati <i>et al.</i> (2022) ^[20]

4. Adoption of Geographical Indications

Ngokkuen and Grote (2010) ^[37] reported that institutional and social factors such as access to information, transportation costs and cooperative membership, significantly influenced the adoption of GI certification among Jasmine rice households in Thailand's TKRH area, using marginal effects from a logit regression model. Similarly, Wongprawmas *et al.* (2012) ^[62] explored European gatekeepers' perceptions of Thai GI products through content analysis and concept mapping. Their findings revealed eight key determinants shaping purchasing decisions for imported food products: quality, price, food safety, environmental considerations, social responsibility, business relationships, consumer awareness and preferences, and competitive positioning.

Beyond GI adoption, research has also focused on sustainable and quality-enhancing agricultural practices. Ng'ombe *et al.*, (2014) ^[39] identified that the age of the household head, access to credit, labour availability, in-kind income, and location within agro-ecological regions (AER) I and II significantly increased the likelihood of adopting Conservation Farming (CF) practices in Zambia using logistic regression. The authors emphasized the importance of targeting farmers in less accessible and ecologically suitable regions to promote adoption. Ihsaniyati *et al.* (2020) ^[21] examined farmers' attitudes toward standard production methods for Temanggung Robusta coffee's GI in Indonesia and found predominantly positive attitudes, with social influence playing a significant role, while demographic factors such as age and education were not significant.

Sitorus *et al.* (2020) ^[55] assessed the impact of Good Agricultural Practices (GAP) on white pepper farming in Indonesia using Propensity Score Matching and logit regression. Their results showed that older farmers, those with higher education levels, larger households, and larger farm sizes were more likely to adopt GAP, whereas longer farming experience reduced adoption likelihood. Importantly, GAP implementation significantly improved productivity, market prices, and farm income. Cei *et al.* (2021) ^[11] further contributed by identifying local and regional determinants of GI adoption in Europe, highlighting that remoteness, the presence of less-favoured areas, producers' willingness to cooperate, and historical experience with GI registration were major drivers influencing the degree of protection sought through GI labels. More recent studies have emphasized behavioural and psychological factors. Nguyen and Drakou (2021) ^[40] found that Vietnamese coffee farmers' intentions to adopt sustainable agricultural practices were shaped by perceived social pressure, self-efficacy, and climate change awareness, with social trust closely linked to financial control. Ihsaniyati *et al.* (2022) ^[20] reported that farmers' attitudes, subjective norms, and innovation characteristics significantly influenced the intention to adopt GI-based quality standards among Robusta coffee farmers in Indonesia using Partial Least Squares (PLS) modelling, while knowledge alone did not directly motivate adoption due to concerns about marketing channels, capital requirements and processing time. The authors stressed the critical role of institutional and governmental support. Laksono *et al.* (2022) ^[26] similarly found that attitude toward behaviour, perceived behavioural control, and perceived

economic benefits were the primary determinants of farmers' willingness to adopt GI practices in Indonesia, whereas subjective norms had no significant effect. Farmers' knowledge mainly influenced perceived behavioural control and procedural willingness. Likewise, Nirosha and Mansingh (2024) ^[41] observed that inadequate infrastructure hampers the promotion and commercialization of GI-tagged products. Moreover, these products have minimal visibility in both domestic and international markets due to weak marketing approaches, lack of post-production regulation, and unethical trade practices, highlighting the need for a strong enforcement framework across markets.

Overall, the literature indicates that GI adoption and sustainable practice uptake are shaped by a complex interplay of institutional, economic, social, behavioural, and regional factors. While economic incentives and market access remain central, social networks, trust, institutional support, and farmers' perceptions increasingly emerge as critical drivers. However, empirical evidence remains limited for sub-national contexts such as Indian states, particularly Tamil Nadu, highlighting a clear research gap that the present review seeks to address.

5. Impact of Geographical Indications in income and welfare of the farmers

The potential for producer-driven geographical indication Indonesian speciality coffee competes with corporate-driven quality constructions, where the latter are able to appropriate place-related quality associations by using trademarks, vertical integration and tightly coordinated supply chain controls (Neilson, 2007) ^[35]. Examining 11 cases from developed countries and 13 from developing and transitional economies, Larson (2007) ^[63] found that negative or contradictory environmental outcomes were more prevalent in developing contexts due to weaker institutional frameworks. Lence *et al.* (2007) ^[27] emphasized that stronger property rights protection increases incentives for producers to establish new geographical designations of agricultural products (GDAPs), particularly when development and marketing costs are high and expected market size is limited. They further noted that enhanced producer control over supply is essential for recovering fixed costs and that robust property rights can improve welfare even after GDAPs are established.

Suh and MacPherson (2007) ^[56] reported that within six years of GI registration, Boseong green tea in South Korea experienced enhanced product image, increased production, and growth in tea-related industries and tourism, with tea prices rising by over 90 percent. Barjolle *et al.* (2009) ^[4], based on 14 case studies, cautioned that when economic objectives dominate GI implementation, significant risks can arise. For example, the Chontaleño cheese case in Nicaragua showed that GI registration may strengthen monopolistic power among dominant actors, potentially excluding small-scale farmers and processors from markets.

Das (2009) ^[13] highlighted that public or quasi-public institutional interventions are essential for successful GI initiatives in India, noting that GI registration alone is insufficient. However, experiences with Pochampally Ikat and Chanderi Fabric demonstrated that collective rights can contribute meaningfully to the socio-economic well-being of producers and artisans. Jena and Grote (2012) ^[23], in their study on Basmati rice in northern India, found that gross margins were higher for Basmati compared to non-Basmati rice but lower than sugarcane, with an average income increase of 15,000.

Access to extension services, risk management mechanisms, and ₹ household labor significantly influenced adoption, and Basmati cultivation was shown to enhance household welfare. Neetha and Umesh (2012) ^[34] observed low consumer awareness of GI registration for Palakkadan Matta rice, although consumers were willing to pay a premium of 5.01 per kilogram, and ₹ producers were willing to continue cultivation with an additional 5.82 per kilogram. Similarly, ₹ in northeastern Thailand, GI adoption was found to have a positive and significant effect on household welfare and poverty reduction, contingent on awareness and adoption rates (Ngokkuen & Grote, 2012) ^[38]. Cacchiarelli *et al.* (2016) ^[8] identified that certifications of origin generate significant price premiums in Italian olive oil and wine markets, with DOP/IGP olive oils commanding an average premium of 11.5 percent, higher than in Spain, and DOCG wines achieving an average premium of 43.8 percent compared to IGT wines. Their findings also indicated that olive oil prices are more sensitive to farm location, whereas wine prices are more responsive to certification status.

Cei *et al.* (2018) ^[10], using a difference-in-differences approach across Italian NUTS ^[3] regions, found that GI implementation does not automatically promote rural development, as outcomes depend heavily on local, community, and product-specific characteristics. Radhika *et al.* (2018) ^[49] reported that among Kerala GI rice varieties, Palakkadan Matta recorded the highest yields but comparatively lower net income, marketed income, and marketed surplus, while Pokkali exhibited the highest marketed surplus. Sharma and Rajan (2018) ^[53] argued that although GI status strengthens place identity, effective benefits require direct marketing strategies, integration of e-commerce platforms, and the enforcement of good agricultural practices, noting that GI recognition alone does not guarantee improved farmer outcomes.

Hoang *et al.* (2020) ^[19] found that GI-certified Cao Phong oranges in Vietnam contributed positively to sustainable rural development, with growers adhering strictly to codes of practice, including environmental conservation measures. Milano and Cazella (2021) ^[33], in their review, identified 16 positive and five negative environmental impacts associated with agrifood GIs, highlighting both their potential to promote sustainable and diverse agroecosystems and their capacity to generate adverse outcomes when key factors are overlooked. Poetschki *et al.* (2021) ^[46] reported that in the European Union, average farm net income was higher for GI adopters than non-adopters in both olive and wine sectors, indicating a significant positive income effect of GI adoption. However, Radhika *et al.* (2021) ^[48] showed that although prices of Kerala GI rice varieties increased following GI registration, the benefits were not adequately transmitted to producers, largely due to weak post-recognition institutional support, thereby limiting the realization of GI potential.

6. Value chain and its efficiency of commodities in post GI registration

A value chain is a range of activities required to bring a product from production to the final consumer (Kaplinsky and Morris, 2000) ^[24]. A GI-based product can generate a premium brand price and contribute to local employment, ultimately, helping local community development (Startitz, 2012). Since 21st Century, there has been an increasing demand for local, traditional and more extensively produced food (Verbeke and Ward, 2006) ^[65]. GIs enabled farmers to claim a price premium for Koerintji Cinnamon in Indonesia, added value and

credibility to TAKTIK farmers, leading to price improvement (Menggala *et al.*, 2021) [32]. For GI Coffee in Colombia and Kenya, the GI process supported for recovering increasing economic efficiency and the payment of a fair price for a given quality. In contrast, the implementation of the quality differentiation by the public authority was likely to reinforce their legitimacy while at the same time improved the promotion of Kenyan coffee (Barjolle *et al.*, 2017) [5].

Using Meta-analytical model, Deselnicu *et al.* (2013) [14] identified the premium was lower for wine and olive oil, where alternative means of product differentiation (e.g., branding) exist. Also controlling for product characteristics, GIs adopting stricter regulations (PDO) yielded larger premiums than less regulated markets. Also, the relative benefits of the most stringent GIs in EU supply chain and quality performance (i.e., QDO) for improving final quality were intensified in wine co-operatives within the group of co-operatives, QDO producers obtained quality scores higher than PDO producers and the quality of wineries was positively associated with the adoption of the most stringent GIs (Lopez-Bayon *et al.*, 2018). In 2020, Lopez-Bayon also revealed that except for wineries with the lowest GI category (i.e., PGI), GI wineries show higher quality than non-GI wineries, also more stringent categories increased quality, but at a decreasing rate and the GIs covering very large geographic areas were found to be less effective.

Farmers in Hungary reported that no difference in the price they received for designated and non-designated geographical indication Tagged Mako onions at wholesale level, but realized only at the retail level with smaller difference. PDO registration had not stimulated cooperative activity between farmers and had not increased their bargaining power in the value chain (Tregear *et al.*, 2016) [57]. Also, GI registration entailed exclusion of certain players but to prevent that from hitting weaker ones in cheese-dairy sector in Latin America, certain restrictions needed to be in place, poor farmers need to be protected from powerful overseas and national players with access to technology, production structures and trade channels. Otherwise, outsiders could exploit the reputation of the registered name and leave traditional farmers largely outside the evolution of value chains, although they played an important social role in the production system of marginalised areas (Mancini, 2013) [31]. Likewise, Basawaraj *et al.* (2023) reported that GI-certified Hadagali jasmine serves as a significant livelihood source for multiple value chain stakeholders and offers substantial scope for the floriculture industry in Karnataka.

Among the nine identified marketing channels for olive oil agro-industry in Algeria, Channel 1 (Producer-Bottling Units-Retailers-Consumer), channel 2 (Producer-consumer) and channel 3 (Producer-Retailers-Consumer) were having the higher producer's share for value added than the other stakeholders share. But in channel 3, the producers had adopted a vertical development strategy which eliminated intermediaries in order to control the chain including production, processing and bottling. As a consequence, production costs were higher and include a significant high packaging cost that represented more than 30 per cent of the total costs (Boudi *et al.*, 2016) [7]. But in case of agricultural commodities, the Commission agents and wholesaler play a major role, In Tamil Nadu, for GI banana, the marketing efficiency was found higher in channel I (Producer-Commission Agents-Wholesaler-Retailer-Consumer) followed by channel II (Producer-Commission Agents-Wholesaler-Consumer) and channel III (Producer-Commission agent-

consumer). Also, the producer's share in consumer rupee was found maximum in channel III (Dhamotharan *et al.*, 2013) [15, 66].

7. Consumers preferences and willingness to pay for Geographical indication products

Use of PGI labels on products that are not high quality is not an efficient marketing strategy and possibly could damage the collective reputation that causes higher quality products to command a premium price WTP for fresh meat product, Galician Veal (*Ternera Gallega*) (Loureiro and McCluskey, 2000) [30]. Among colour, price and vitamin C content of Bell Peppers in US, colour was the more important than retail price in shaping consumers' purchase decision, while vitamin C content was nearly irrelevant (Frank *et al.*, 2001) [18]. Consumers' assessing quality of organic vegetable in Benin and Ghana are: damage free, freshness, size, bright colour and hardness. Consumers are willing to pay more than 50% as price premium for chemical free vegetable (Nouhoheflin *et al.*, 2004) [43]. The most likely factors influencing consumers' willingness to pay for chemical free vegetable are the socio-professional category acting as a proxy for income level, the awareness of chemical residue, the availability, the label and the taste. In US, the higher probabilities of paying a premium are associated to consumers who seek out certified products and who believe certification can lessen environmental impacts such as tropical deforestation. Marginal effects suggest consumers' willingness to pay a 10% premium for three of the four certified items studied (Aguilar and Vlosky, 2006).

The urban Nairobi kale consumers' maximum WTP for the leafy vegetables safety attribute to be 68 percent in high-end speciality stores, 34 percent in supermarkets, 39 percent in open-air markets and 28 percent in roadside markets (Ngigi *et al.*, 2011) [36]. They also conclude that consumer's demands nutrition, sensory and safety attributes most, while ethics and convenience were least demanded attributes. The main factors which distinguished willing to pay and unwilling to pay kale consumer were market type choice, weighted safety score, SOR, consistency and presence of children. But Acheampong *et al.*, (2012) [1] showed that labelling, visual appearance, freshness and availability had significant influences on consumers' willingness to pay higher prices for safe vegetables in Ghana. Also, if visual appearance of the vegetables was good and vegetables were readily available. Incidentally, packaging, certification and accessibility had no impact on the willingness to pay a higher price as the coefficients were not significant. Unsurprisingly, freshness had a positive and highly significant coefficient showing its high influence on consumers' willingness to pay a higher price for safe vegetables. The same results were found by Owusu and Anifori (2013) [45] for organic watermelon and lettuce in Ghana.

Majority of the consumers in Dindugal district preferred to buy GI banana for its medicinal value (38 per cent) followed by perishability (29 per cent) and taste (21 per cent). For the price premium the respondents preferred to pay less rather than more for the GI banana (Dhamotharan and Selvaraj, 2013) [15]. Also, many producers are not members of the federation and the task of federation is to enroll all the producers as members in order to maintain the quality attributes for which these bananas are known in the market. In Malaysia, the gender, geographical area, income, consumers' preference, motivation, intention, perception, environmental friendliness, and food safety significantly influence consumers' willingness to pay for green foods (Rezai *et al.*, 2013) [50]. Their estimated percentage that

consumers are willing to pay more for green foods is 16.93% higher than the market price. In eastern Washington and northern Idaho distance of origin is an important considerable factor in choice preference, consumers prefer beef and beef products produced in close proximity of the consuming market to beef and beef products produced at large regional processing facilities (Ridley *et al.*, 2015)^[51]. The average premium for GI products, Aldi (29%), Penny (46%), and the highest was in Lidl (54%) (Jantiyik and Torok, 2020)^[22]. Overall, the average price premium is remarkably high (43%) in the case of discounters, which are focusing on reaching price-sensitive consumers, indicating that there is a perceptible price premium for GI products in the Hungarian market.

8. Conclusion

From the above review, we can conclude that in general, the expected and observed impacts of geographical indication agricultural products are mainly determined by the economic and socio-economic related aspects. It is seemed that the geographical indication improved the welfare of the producers but not at the remarkable level. Many products lag post-GI regulations and some similar products imitate the GI products. So, the consumers are easily gets confused between those products. In some studies, the GI products fetch higher price from consumers side, but it is not reaching the producer side. A good or product which gets GI alone will not made it to be successful, the awareness of the product to be reached on both producer and consumer side. With these studies alone we can't say that the GI products are performing good. There is a lack of quantitative research towards GI products. Taken these points into consideration and fill these gaps, there is a need for further research on GI products to identify the key issues and challenges in the Geographical indication commodities.

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